

## PRIVILEGED AND CONFIDENTIAL

SPILL CONTINGENCY PLAN NORMAN WELLS AIRPORT, NORTHWEST TERRITORIES AIRSIDE LAND TREATMENT UNIT

Submitted to:



Sahtu Land and Water Board Box 1 Fort Good Hope, NT X0E 0H0

Sahtu Land Water Board Water Licence, Type B, Number S17L8-003 Sahtu Land Water Board Land Use Permit, Type A, Number S17X-004

Prepared by:

## **BluMetric Environmental Inc.**

3108 Carp Road, PO Box 430 Ottawa, ON K0A 1L0

> Project Number: 170518-02 February 2018

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## 1. INTRODUCTION

BluMetric Environmental Inc. (BluMetric<sup>™</sup>) has been retained by Public Services and Procurement Canada (PSPC) and Transport Canada (TC) to prepare this revised Spill Contingency Plan (SCP) for continued soil treatment and sampling activities within the Airside Land Treatment Unit (LTU) on the Norman Wells Airport property, in Norman Wells, Northwest Territories.

Additionally, this revised SCP has been prepared to include the commencement of groundwater sampling activities being planned for the recently-installed monitoring wells located up- and downgradient of the LTU.

This revised SCP has been generated as required by the Sahtu Land and Water Board (SLWB) to remain in compliance with the Water Licence (Type B, Number S17L8-003) and Land Use Permit (LUP) (Type A, Number S17X-004) that commenced on December 5, 2017. BluMetric has supported the maintenance and sampling work that occurred at the facility in 2017 and provided contractor supervision for local contractor HRN Contracting who provides heavy equipment and operators to conduct work at the site. The BluMetric contract for the technical support and contractor supervision role for Norman Wells Airside LTU project ends on March 31, 2018. The work at the LTU is being completed on behalf of Transport Canada, the permittee and licencee.

The SCP demonstrates that PSPC and TC have appropriate response capabilities and measures in place to effectively address potential spills that may occur.

The following table provides contact information for the licensee and the project team:



## Project Contact Information:

Federal Government Project Manager	Licensee:
Public Services and Procurement Canada	Transport Canada
Western Region	Prairie and Northern Region – Technical and
	Environmental Services
10025 Jasper Avenue	
Edmonton, AB T5J 186	344 Edmonton Street
	Winnipeg, MB R3B 2L4
Project Manager: Michael Brownlee	
780-497-3640 (office)	Project Manager: Melissa Fraser
780-720-7748 (cell)	204-958-7280
Contractor – Project Management	Subcontractor – Onsite Work
BluMetric Environmental	HRN Contracting Ltd.
Physical address (accurian participas)	Physical address (accuries to allogas).
<u>Physical address (courier packages):</u>	<u>Physical address (courier packages):</u>
Tellowknite, NT XTA IP3	Norman Wells, NT XUE UVU
Tel: 867-873-3500	Tel: 867-387-2168
Fax: 867-873-3499	
Postal addrass	Postal addrass
$\frac{POSIAI address.}{1086}$	$P \cap P_{OV}$ 329
Vallowknifa NT X1A 3X7	Norman Walls NT XOE 0V0
Tenowkine, NT XIX 5X7	
Project Manager: Andrea Jenney	Contact:
Senior Engineer	Chris Chivers, Senior Field Foreman
(705) 525-6075 x25 (office)	C: 204-430-2503
Yellowknife Office Numbers	
Tel: 867-873-3500	
Fax: 867-873-3499	

This revised SCP is effective upon its approval by the Sahtu Land and Water Board.



## 2. PURPOSE AND SCOPE

The purpose of this plan is to outline response actions for potential spills or unauthorized discharges of any size, including a worst-case scenario, so that petroleum products, hazardous materials, and other wastes associated with the project do enter any waters. The plan identifies key personnel and their roles and responsibilities in the event of a spill or unauthorized discharge, as well as equipment and other resources available to respond to a spill or unauthorized discharge. It details response procedures that will minimize potential health and safety hazards, environmental damage, and inform clean-up efforts. This plan has been prepared to ensure quick and easy access to all the information required in responding to a spill or unauthorized discharge.

## 3. COMPANY ENVIRONMENTAL POLICY

BluMetric is committed to the concept of sustainable development, and the protection of the environment and human health. The goal of BluMetric's environmental, health, and safety policy is to:

- protect employees, the public, and the environment;
- fully comply with all applicable legislation, regulations, and authorizations;
- work proactively with federal, territorial, municipal, and Indigenous governments, other relevant organizations, and the general public, on all aspects of environmental protection;
- anticipate future spill control requirements and make provisions for them; and,
- keep employees, contractors, inspectors, the Sahtu Land and Water Board, appropriate governments (Indigenous, federal, territorial, and municipal), and the public, informed of any changes at the site, or with project activities.

Prior to the commencement of any on-site work occurring, employees will review this revised SCP and confirm during the Daily Morning Safety Meeting that they are aware of the steps to be undertaken in the event of a spill. All employees and contractors are shown where spill kits are stored, are aware of their contents, and are trained in using spill equipment and responding to spills. BluMetric is committed to keeping personnel up-to-date on the latest technologies and spill response methods.



## 4. PROJECT DESCRIPTION

The LTU was designed to hold approximately 2500m<sup>3</sup> of PHC contaminated soil (Arcadis 2017). Dimensions of the facility are approximately 100m by 50m with a 0.5m berm surrounding the LTU. This area was compacted and lined with a synthetic geomembrane to prevent contaminants from leaching into the environment. No other specifics on the construction of the landfarm are available (including design drawings).

Three (3) monitoring wells were previously installed around the facility (one upgradient and two downgradient) to monitor possible groundwater impacts associated with the LTU. These wells became damaged and were replaced by three (3) new monitoring wells in January 2018.

In 2017, BluMetric was retained to complete soil sampling and treatment, liner repairs where required, groundwater and surface water sampling, and any other work related to the LTU, with the ultimate goal of successfully remediating the LTU soil and decommissioning the LTU.

Through the remainder of 2018, the scope of work for the facility will including groundwater sampling at the newly-installed monitoring wells up- and downgradient of the LTU, soil aeration, and soil sampling. The scope may include the removal of treated soil from the LTU that meets the applicable criteria for decommissioning as wells as the potential decommissioning of the infrastructure including the berms and liner if all soil is found to meet the applicable criteria.

## 5. SITE DESCRIPTION

The LTU is located airside on the Norman Wells Airport property, to the east of the runway. There are no structures or infrastructure on the site. The LTU was constructed to contain approximately 2,500 cubic metres (m<sup>3</sup>) of petroleum hydrocarbon (PHC) -impacted soils excavated from several contaminated sites on the Airport grounds. The LTU is approximately 100 metres (m) by 50 m with a 0.5m berm surrounding the LTU and slopes from north to south. The LTU is estimated to contain approximately 4,230 cubic metres (m<sup>3</sup>) of soil. The soil is currently formed into three windrows, totaling approximately 2,950 m<sup>3</sup>, and the remainder of the LTU has a covering of approximately 0.3 m to protect the integrity of the LTU, which totals approximately 1,280 m<sup>3</sup>.

The LTU is lined with a synthetic geomembrane to prevent leaching of contaminants into the subsurface. At the southern end of the LTU, there is a sump that was constructed to contain rain and/or snowmelt runoff from draining out of the LTU. New monitoring wells located up- and downgradient of the LTU were installed in January 2018 to replace the previously-installed monitoring wells. Due to frost-jacking, these previously-installed wells were no longer viable and



were decommissioned concurrent with the installation of the new monitoring wells. The new monitoring wells will be utilized to evaluate the performance of the geomembrane liner.

## 5.1 LIST OF HAZARDOUS MATERIALS ON SITE

There is no fuel stored in or around the vicinity of the LTU, currently.

Hazardous materials, in the form of diesel fuel, will only potentially be on-site during soil aeration activities to re-fuel the excavator. The specifications for the proposed excavator can be found in Appendix D. Fertilizer will only be present on site as it is deemed required based on soil quality analytical results. Fertilizer will only be added as required during the aeration of the soil. The MSDS for diesel fuel and fertilizer are located within Appendix E.

Material	Storage Container	Maximum On-site	Storage Location and Uses		
Diesel Fuel	450-litre tank in bed of pickup truck, in double-walled tank	450-litre tank	Used to fuel excavator.		
Fertilizer	Manufacturers packaging – wrapped and stored within a building off-site until required for use in the LTU	– 40 – 50lb Off-site HRN warehouse. in a bags (909 kg Only used as needed d for total) nutrients in soil to ai treatment.			
Wastewater	Potentially contaminated water may accumulate within the bermed area of the LTU.	Unknown	Water may accumulate within the sump area within the berm and may be pumped out into a vacuum truck or storage tanks in the event that it can no longer be contained within the berm during a storm event or spring freshet. Water quality will be assessed to determine if this water is in fact hazardous.		

 Table 1:
 Hazardous Materials Temporarily On-site

A CanRoss 20 L universal spill kit or equivalent will accompany the refuelling truck when it is on site to fuel the excavator as required. The 20 L universal kits contain five socks, nitrile gloves, safety goggles, disposal bags and an instruction booklet. A description of the spill kit is attached in Appendix A.



Spill kits are located wherever fuel is used. Portable drip trays and appropriately-sized fuel transfer hoses with pumps are used when re-fueling motorized equipment, to avoid any leaks/drips onto the ground surface.

Details on spill response for the wastewater within the berm are detailed within the Operations and Maintenance Plan for the facility and provided under a separate cover.

## 6. PROCESS FOR STAFF RESPONSE TO MEDIA AND PUBLIC INQUIRIES:

The company has established procedures for dealing with media and public inquiries. All inquiries are to be directed to Michael Brownlee, Project Manager for Public Services and Procurement Canada in Edmonton, AB.

If the Project Manager is not available, there will be another staff member available to act in this position. If a reporter or member of the public arrives at the site unexpectedly, the official in charge of responding to their questions will be the Project Manager.

The BluMetric Field Supervisor and Project Manager should always keep the PSPC Project Manager informed of any news or updates of potential interest to the media or general public, such that PSPC is prepared to deal with inquiries any time.

If a spill has occurred, a NWT Spill Report may need to be filled out depending on the size of the spill (see Appendix B). This information is available for the public to view upon request by contacting the NWT Spill Line, or by viewing the GNWT Hazardous Materials Spills Database <u>online</u>.

## 6.1 **RESPONSE ORGANIZATION**

The flow chart depicted in Figure 1 below identifies the response organization, and when applicable, their alternates, as well as the chain-of-command for responding to a spill or unauthorized discharge. The duties of various response personnel are summarized, contact information is provided, including 24-hour phone numbers for responsible people, and the location of communications equipment on-site is discussed.

An immediately reportable spill is defined as a release of a substance that is likely to be an imminent environmental or human health hazard, or meets or exceeds the volumes outlined in Appendix B. It must be reported to the NWT 24-Hour Spill Report Line at 867-920-8130. Any spills less than these quantities do not need to be reported immediately to the spill reporting line. Rather, these minor spills will be tracked and documented by BluMetric and submitted to the appropriate authority, either immediately upon request, or at a pre-determined reporting



interval. If there is any doubt that the quantity spilled exceeds reportable levels, the spill will be reported to the NWT 24-Hour Spill Report Line.

Cell phones will be available to all personnel in the field. In the event of a spill involving danger to human life, these phones will be used to contact emergency response personnel in Norman Wells.

Following reporting of the spill to the Project Manager/Field Supervisor, he/she will report the spill to the NWT 24-Hour Spill Line as necessary. The Project Manager will also inform the head office for tracking spills in company databases, and notify the head office in the event of media inquiries. The 24-hour emergency head office number is 867-123-3333.



## Figure 1: Flow chart of response organization (details of each step will be provided in the procedures for initial actions under the Action Plan within Section 7 below)





## 6.2 POTENTIAL SPILL SIZES AND SOURCES FOR EACH HAZARDOUS MATERIAL ON SITE

In Table 2, a list of potential discharge events, with associated discharge volumes and directions, is presented for the primary hazardous materials present on-site. The most likely discharge volume is indicated and the spill clean-up procedures will focus on spills of this quantity. A worst-case scenario is also presented.

Material (sources)	Potential Discharge Events	Direction of Potential Discharge			
Diesel fuel (excavator)	<ol> <li>Leaking from the excavator.</li> <li>Over-pumping of fuel from diesel tank in truck into excavator (worst-case).</li> </ol>	450 litres	Toward any nearby watercourses in the area the north of the LTU (likely re-fueling location of excavator) (potential for seepage into soil which could impact groundwater or a downgradient surface water body).		
Fertilizer	3. Fertilizer is spilled onto ground outside of bermed area	909 kg	The fertilizer is a dry material which could spill to the ground during transport and the worst case scenario would be that it enters a surface water body.		

## Table 2: Potential Discharge Events

## 6.3 POTENTIAL ENVIRONMENTAL IMPACTS OF SPILL (INCLUDE WORST-CASE SCENARIO)

Overall, for all hazardous materials discussed below, impacts are lower during winter as snow is a natural sorbent and ice forms a barrier limiting or eliminating soil or water contamination. As such, spills can be more readily recovered when identified and reported.

## 6.3.1 Diesel Fuel

Environmental impacts: Diesel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Diesel burns slowly and the risk to the environment is reduced during recovery, as burn can be more readily contained compared with volatile fuels. Runoff into water bodies must be avoided.



Worst-case scenario: The tank within the truck is punctured and the entirety of contents seeps into surrounding soil and water bodies. This could cause illness or death to aquatic life and indirectly affect wildlife feeding from the land and water.

## 6.3.2 Fertilizer

Environmental impacts: Fertilizer may be harmful to wildlife and aquatic life. It could add to the nutrient loading of a water body if spilled within an aquatic environment and could be detrimental to aquatic life.

Worst-case scenario: The pallet of fertilizer is dumped onto the ground adjacent to a water body while being transported to the site. This could cause illness or death to aquatic life and indirectly affect wildlife feeding from the land and water.

## 7. ACTION PLAN

## 7.1 PROCEDURES FOR INITIAL ACTIONS:

- Ensure safety of all personnel.
- Assess spill hazards and risks.
- Remove all sources of ignition (for fuel spills).
- Stop the spill if safely possible (e.g., shut off pump, replace cap, patch leaking hole). Use the contents of the nearest spill kit to aid in stopping the spill if it is safe to do so. Tyvek suits and chemical master gloves are located in the spill kit and should be worm immediately if there is any risk of being in contact with fuel.
- No matter what the volume is, notify the PSPC Project Manager via cell phone.
- Contain the spill use contents of spill kits to place sorbent materials on the spill, or use shovel to dig dyke to contain spill. Methods will vary depending on the nature of the spill. See Sections 7.3 and 7.4 below for more details.
- Record relevant spill information for reporting purposes when able to do so (e.g., approximate quantity, product type, location, whether spill is still in progress, odour, colour, weather).



## 7.2 SPILL REPORTING PROCEDURES

In the case of a spill or emergency, the 24 Hour Northwest Territories Spill Report Line should be contacted first by the Proponent, who will then involve ECCC Emergencies when appropriate. For information relating to the environmental enforcement and reporting requirements under the Canadian Environmental Protection Act and the Fisheries Act please contact ECCC Environmental Enforcement at 867-669-4730. The ECCC National Environmental Emergencies Centre (NEEC) will provide technical and scientific environmental advice and assistance to the lead agency, in the event of an environmental emergency. A lead agency is described as the governmental authority that regulates or has authority over the activity from which the emergency originated. NEEC can be contacted at 1-866-283-2333.

Report the spill immediately to Project Manager/Field Supervisor, who will determine if spill is to be reported to the NWT 24-Hour Spill Line at 867-920-8130.

Each spill kit, as well as the Project Manager/Field Supervisor, will have copies of the NWT Spill Report form to be filled out (see Appendix C). Fill out and fax or email the Spill Report to the staff of the NWT 24-Hour spill line. Also, fax or email the report to the head office.

NWT 24-Hour Spill Line Phone: (867) 920-8130 NWT 24-Hour Spill Line Fax: (867) 873-6924 NWT 24-Hour Spill Line Email: <u>spills@gov.nt.ca</u> BluMetric Head Office: Andrea Jenney (705) 525-6075 x25

<u>Physical address:</u> 4916 49 Street Yellowknife, NT X1A 1P3 Tel: 867-873-3500 Fax: 867-873-3499

## 7.3 PROCEDURES FOR CONTAINING AND CONTROLLING THE SPILL (E.G. ON LAND, WATER, SNOW. ETC.)

- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of spill and cause of movement (water, wind, and slope).
- Determine best location for containing spill, avoiding any water bodies.
- Have a contingency plan ready in the case that a spill worsens beyond control, or if the weather or topography impedes containment.



## 7.4 Specific Spill Containment Methods for Land, Ice, and Snow are Outlined Below

## 7.4.1 Containment of Spills on Land

Spills on land include spills on rock, gravel, soil, and/or vegetation. It is important to note that soil is a natural sorbent, thus spills on soil are generally less serious then spills on water as contaminated soil can be more easily recovered. Generally, spills on land occur during the late spring, summer, or fall when snow cover is at a minimum. It is important that all measures be undertaken to avoid spills reaching open water bodies.

For dry materials such as fertilizer, the material should be shoveled into a container as soon as possible or if not possible, covered to minimize contact with precipitation.

## Dykes

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled fuel. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of fuel that may reach it. A plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly, a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill.

## Trenches

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels, pick axes, or a loader can be used depending on the size of trench required. It is recommended that the trench be dug to the bedrock or frozen ground, which will then provide containment layer for the spilled fuel. Fuel can then be recovered using a pump or sorbent materials.

## 7.4.2 Containment of Spills on Snow

Snow is a natural sorbent, thus as with spills on soil, spilled fuel can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shoveling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.



## Dykes

Dykes can be used to contain fuel spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created, thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel/snow mixture can then be shoveled into barrels or bags, or collected with sorbent materials.

## 7.4.3 Worst-case Scenarios

Dealing with spilled fuel which exceeds the freeboard of a dyke or barrier would present a possible worst-case scenario for the LTU site. To contain the overflow, a trench or collection pit would have to be created downstream of the spill to contain the overflow. Fuel contained therein would have to be transferred to storage drums and disposed of at a licensed facility.

## 7.5 PROCEDURES FOR TRANSFERRING, STORING, AND MANAGING SPILL-RELATED WASTES

In most cases, spill cleanups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small spill clean-up. A pump with attached fuel transfer hose can suction spills from leaking containers or large accumulations on land or ice, and direct these larger quantities into empty drums. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Heavy equipment can be used if deemed necessary, and given space and time constraints.

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are available in the spill kits located in the on-site vehicle. Following clean up, any tools or equipment used will be properly washed and decontaminated, or replaced if this is not possible.

For most of the containment procedures outlined above, spilled petroleum products and materials used for containment will be placed into empty waste oil containers and sealed for proper disposal. In the event of a spill, they will be disposed of at the Norman Wells Solid Waste Disposal Site with the permission of the Town of Norman Wells. If disposal Norman Wells Solid Waste Disposal Site is not possible, the waste containers will be transported to, and disposed of, at the nearest licensed disposal facility.

Fertilizer that has been spilled onto the ground will be dug up and contained in drums and could be used within the LTU as required. If not required for use within the LTU, it will be sampled to determine if it can be disposed of at the Norman Wells Solid Waste Disposal Site or if off-site disposal at a licensed facility is required.



## 7.6 PROCEDURES FOR RESTORING AFFECTED AREAS

Once a spill of reportable size has been contained, BluMetric will consult with the GNWT ENR Inspector assigned to the file to determine the level of cleanup required. The Inspector may require a site-specific study to ensure appropriate clean up levels are met. Criteria that may be considered include natural biodegradation of oil, replacement of soil, and/or revegetation.

## 8. **RESOURCE INVENTORY**

## 8.1 ON-SITE RESOURCES

Individuals on-site will include a BluMetric Environmental Technician and/or Scientist, and at times, an equipment operator with HRN Contracting Ltd.

Spill kits will be present at the site during all on-site activities; Appendix A.

## 8.2 OFF-SITE RESOURCES

Depending on the severity of the spill, a GNWT official would be able to reach the site the same day that the spill occurred.

In the case of a spill or emergency, the 24 Hour Northwest Territories Spill Report Line should be contacted first by BluMetric, who will then involve ECCC Emergencies when appropriate. For information relating to the environmental enforcement and reporting requirements under the Canadian Environmental Protection Act and the Fisheries Act please contact ECCC Environmental Enforcement at 867-669-4730. The ECCC National Environmental Emergencies Centre (NEEC) will provide technical and scientific environmental advice and assistance to the lead agency, in the event of an environmental emergency. A lead agency is described as the governmental authority that regulates or has authority over the activity from which the emergency originated. NEEC can be contacted at 1-866-283-2333.

NWT 24-Hour spill line (867) 920-8130

GNWT Lands Inspector (867) 587-7200

Environment Canada Environmental Enforcement (867) 669-4730



GNWT Environmental Protection Division (867) 873-7654

GNWT Environmental Health Office (867) 777-4840

RCMP (Norman Wells) (867) 587-1111

Health Centre (Norman Wells) (867) 587-6688

The above spill contingency plan has been prepared on behalf of PSPC and TC for the operations at the Norman Wells Airside LTU. If further clarifications are required, please contact the PSPC Project Manager as noted above in the contact information table.

Respectfully submitted, BluMetric Environmental Inc.

Dan Tucholski, B.Sc. Environmental Scientist

motion Jenny

Andrea Jenney, P.Eng. Senior Engineer



## APPENDIX A

Spill Kit





## **POLY-OVERPACK® 95 SALVAGE DRUM** IS YOUR OVERPACK REALLY A SALVAGE DRUM?

Our Poly-Overpack<sup>®</sup> 95 meets Group 1 packaging standards and salvage drum regulations. Unlike competing overpacks, our Poly-Overpack<sup>®</sup> 95 safely contains a wide range of hazardous materials including: acids, corrosives and damaged parts—in 55-gallon drums.

Tight, secure and leak-free container closing is simple; place any long object, like a wooden 2x4", in the handy lid slots and turn to screw the lid down tightly.

Meets performance-oriented packaging requirements of US DOT and UN regulations.

Bottom Dia. in. (cm)

25.75 (65)



Load Cap. lb. (kg)

- Twist-down lid for safe closure
- Closed cell gasket in lid seals closure
- Castellations in lid allow for easy closing with pole or wooden 2x4"
- Double wall lid gives added strength
- Molded area allows for easy gripping and lifting by material handling equipment
- Ribbed design provides extra strength

100% UV-protected polyethylene provides protection over a wide range of chemicals

650 (295)	0
AGE DRUM	ENPAC <sup>•</sup> Products are American Made!



Top Dia. in. (cm)

31.38 (80)

Regulations: UN 1H2/X295/S, DOT 49 CFR 173.3(c), EPA, SPCC and NPDES

Part #

1237-YE

## **POLY-OVERPACK® 110 SALVAGE DRUM** IDEAL FOR DISTORTED OR BOWED DRUMS.

Weight lb. (kg)

48 (21.8)

Containing irregular drums is not a problem with this handy-sized overpack. With all the great performance features of the Poly-Overpack<sup>®</sup> 95, but built taller to handle misshapen drums.

Spill Cap. gal. (L)

95 (359.6)

	POLY-OVERPACK <sup>®</sup> 110									
Part #	Top Dia. in. (cm)	Bottom Dia. in. (cm)	Ht. in. (cm)	Weight lb. (kg)	Spill Cap. gal. (L)	Load Cap. lb. (kg)				
1240-YE	31.5 (80)	25.75 (65)	45 (114)	51 (23)	103 (390)	650 (295)				

\_\_\_\_\_

Regulations: UN 1H2/X295/S, DOT 49 CFR 173.3(c), EPA, SPCC and NPDES

POLY-OVERPACK<sup>®</sup> 95

Ht. in. (cm)

41.5 (105)

## **DRUM LIFTER**

Salvage drum loading is one of the trickiest drum handling jobs. This lifter makes it easy! Unique slim design allows unit to be used where clearance is tight. Works great for general drum handling, too. Jaw has only one moving part, making it practically maintenance free.

DKUM LIFIEK							
Part #	Weight lb. (kg)	Load Cap. lb. (kg)					
3100-BU	22 (9.9)	1,000 (453.7)					

\_\_\_\_\_

- Lifts open-head or tight-head pails and drums
- Slim design for loading drums into salvage drums
- 1,000 lb. handling capacity



Roller Technique: Place damaged drum and overpack on their sides with metal rollers underneath drum (i.e. water pipe). Roll drum most of the way inside. Slowly turn overpack upright.



Angle Roll Technique: Place overpack and drum on side with the two angled in a wide vee. Roll together, working the drum inside the overpack. When inward progress stops, reverse the angle and roll the other way. Turn upright when drum is inside the overpack.



Inverted Overpack Technique: Place damaged drum on overpack lid. Slide overpack over the drum. Rotate upright.





Upright Overpack Technique: Remove overpack lid while using Part #: 3100-BU to raise and lower drum. Reduces risk and increases use.





## APPENDIX B

Spill Volume Reporting



## Reportable Quantities for NWT Spills

## Note: L = litre; kg = kilogram; PCB = Polychlorinated Biphenyls; ppm = parts per million

Substance	Reportable Quantity	TDG Class
Explosives	Any amount	1.0
Compressed gas (toxic/corrosive)		2.3/2.4
Infectious substances		6.2
Sewage and Wastewater (unless otherwise authorized)		6.2
Radioactive materials		7.0
Unknown substance		None
Compressed gas (Flammable) Compressed gas (Non-corrosive, non-	Any amount of gas from containers with a capacity greater than 100L	2.1
flammable)		2.2
Flammable liquid	≥100 L	3.1/3.2/3.3
Flammable solid	≥ 25 kg	4.1
Substances liable to spontaneous		4.2
Water reactant substances		4.3
Oxidizing substances	≥ 50 L or 50 kg	5.1
Organic peroxides Environmentally hazardous substances	≥1 L or 1 kg	5.2
intended for disposal		9.0
Toxic substances	≥ 5 L or 5 kg	6.1
Corrosive substances		8.0
Miscellaneous products, substances or		9.0

Substance	Reportable Quantity	TDG Class
organisms		
PCB mixtures of 5 or more ppm	≥ 0.5 L or 0.5 kg	9.0
Other contaminantsfor example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater.	≥ 100 L or 100 kg	None
Sour natural gas (i.e., contains $H_2S$ ) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more	None
Flammable liquid Vehicle fluid	≥ 20 L When released on a frozen water body that is being used as a working surface	3.1/3.2/3.3 None
<ul> <li>Reported releases or potential releases of any size that:</li> <li>1. are near or in an open water body;</li> <li>2. are near or in a designated sensitive environment or habitat;</li> <li>3. Pose an imminent threat to human health or safety; or</li> <li>4. Pose an imminent threat to a listed species at risk or its critical habitat</li> </ul>	Any amount	None

## APPENDIX C

NWT Spill Response Form



# **NT-NU SPILL REPORT**

OIL, GASOLINE, CHEMICALS AND

## OTHER HAZARDOUS MATERIALS

#### NT-NU 24-HOUR SPILL REPORT LINE

Third Support Agency:

Tel: (867) 920-8130 • Fax: (867) 873-6924 • Email: spills@gov.nt.ca

Tel: (8	: (867) 920-8130 • Fax: (867) 873-6924 • Email: spills@gov.nt.ca REPORT LINE USE ONLY											
А	Report Date:         Report Time:           MM         DD         YY				Original Spill Report Report Number:					port Number:		
В	Occurrence Date: MM DI	rence Date: Occurrence Time: MM DD YY			OR Update # to the Original Spill Report							
С	Land Use Permit Number (	f applica	able):			Wa	ter Licence N	umbe	er (if ap	oplicable):	•	
D	Geographic Place Name or Distance and Direction from the Named Location:							urisdiction or Ocean				
Е	Latitude: Degrees	N	Minutes		Seconds	Longitude: Degrees Minutes Seconds						
F	Responsible Party or Vesse	I Name:	:		Responsib	le Pa	arty Address c	or Off	ice Loc	cation:		
G	Any Contractor Involved:				Contractor	Add	ress or Office	Loca	ation:			
Н	Product Spilled:  Pote	ntial Spil	I	Quanti	ity in Litres, I	≺ilog	rams or Cubi	c Me	tres:	U.N. Number:		
I	Spill Source:			Spill C	ause:					Area of Contamin	ation in	Square Metres:
J	Factors Affecting Spill or Recovery:         Describe Any Assis				stance Required: Hazards to Persons, Property or Environme				perty or Environment:			
К	Additional Information, Comments, Actions Proposed or Taken to Contain, Recover or Dispose of Spilled Product and Contaminated Materials:											
L	Reported to Spill Line by:	Po	osition:		Employer	:	Location Calling From:				Telephone:	
М	Any Alternate Contact:	Po	osition:		Employer	:			Altern	nate Contact Locatio	on:	Alternate Telephone:
REP	ORT LINE USE ONLY											,
N	Received at Spill Line by:         Position:         Emplo			Employe	er: Location Called:		n Called:	Repo	ort Line Number:			
Lead Agency: EC CCG/TCMSS GNWT GN				N 🗌 ILA		Significance		] Minor ] Major	- 🗌 Unknown	File	Status: Open	
Age	ncy: Co	ntact N	ame:	С	Contact Time	e:		R	Remarks:			
Lead	Agency:											
First	Support Agency:											
Seco	ond Support Agency:											



## APPENDIX D

Excavator Specification









Engine

Engine Model Net Power – ISO 14396 **Drive** Maximum Travel Speed Maximum Drawbar Pull Cat<sup>®</sup> C7.1 ACERT™ 179 kW (243 hp) Weight

Minimum Weight Maximum Weight

28 717 kg 31 639 kg

5.1 km/h 247 kN

#### Introduction

Since its introduction in the 1990s, the 300 Series family of excavators has become the industry standard in general, quarry, and heavy construction applications. The all-new E Series and the 329E L will continue that trend-setting standard.

The E Series meets U.S. Environmental Protection Agency (EPA) Tier 4 Interim emission standards, European Union Stage IIIB emission standards, and Japan MLIT Step 4 emission standards. The 329E L is also built with several new fuelsaving and comfort-enabling features and benefits that will delight owners and operators.

If you are looking for more productivity and comfort, less fuel consumption and emissions, and easier and more sensible serviceability, you will find it in the all-new 329E L and the E Series family of excavators.



#### **Contents**

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Work Tools	8
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# **Engine** Reduced emissions, economical and reliable performance

## Cat<sup>®</sup> C7.1 ACERT Engine

The Cat C7.1 ACERT engine delivers more horsepower using less fuel than the previous series engine.

## **Emissions Solution**

The C7.1 ACERT engine is equipped to meet U.S. EPA Tier 4 emission standards and Stage IIIB emission standards. Driven by customer input, Caterpillar's aftertreatment regeneration solution ensures the machine works as normal with no operator intervention needed.

The machine comes with two modes of regeneration: automatic and manual.

In automatic mode, the machine starts the regeneration process once the filtering system reaches a certain level and conditions are optimal. The system will not interrupt the work process and can regenerate during machine operation.

Manual mode enables the operator to override the automatic mode.

## **Biodiesel-Ready Fuel System**

The C7.1 ACERT engine is equipped with an electroniccontrolled high-pressure fuel system that includes an electric priming pump and three-layer fuel hose to allow the use of biodiesel (meeting ASTM 6751 or EN 14214) up to B20 (biodiesel 20% mixture).

## **Cooling System**

The cooling system features side-by-side and tilt-out radiators, oil cooler and air coolers for easy cleaning and a fan that automatically adjusts to ambient temperatures to help reduce fuel consumption and noise.

## **Speed and Power Control**

The E Series features speed control to maintain a constant speed – regardless of load – to improve fuel economy. Three different power modes are offered: high power, standard power, and economy power. The operator can easily change between modes through the monitor or console switch to meet the needs for the job at hand – all to help manage and conserve fuel.



# **Operator Station** Comfort and convenience to keep people productive





## Seats

All seats include air suspension, heat, air cooling, a reclining back, upper and lower seat slide adjustments, and height and tilt angle adjustments to meet operator needs for comfort and productivity.

## Controls

The right and left joystick consoles can be adjusted to meet individual preferences, improving operator comfort and productivity during the course of a day. With the touch of a button, one-touch idle reduces engine speed to help save fuel; touch it again or move the joystick and the machine returns to normal operating level. The heavy lift mode increases machine system pressure to improve lift – a nice benefit in certain situations. Heavy lift mode also reduces engine speed and pump flow in order to improve controllability.

## Monitor

The 329E L is equipped with a 7" LCD (Liquid Crystal Display) monitor that's 40% bigger than the previous model's with higher resolution for better visibility. In addition to an improved keypad and added functionality, it's programmable to provide information in a choice of 42 languages to support today's diverse workforce.

An "Engine Shutdown Setting" accessible through the monitor allows owners and operators to specify how long the machine should idle before shutting down the engine, which can save significant amounts of fuel.

The image of the rearview camera is displayed directly on the monitor. Up to two different camera images can be displayed on the screen at the same time.

## MP3-Ready Radio and Power Supply

The standard radio is equipped with a new auxiliary audio port for MP3 players. Two 12-volt power supply sockets are located near key storage areas for charging electronic devices.

## Storage

Storage spaces are located in the front, rear, and side consoles. A specific space near the auxiliary power supply holds MP3 players and cell phones. The drink holder accommodates large mugs with handles, and a shelf behind the seat stores large lunch or toolboxes.

#### Automatic Climate Control

The climate control system features five air outlets with positive filtered ventilation, which makes working in the heat and cold much more pleasant.



## **Hydraulics** Power to move more dirt, rock, and debris with speed and precision

#### **Hydraulic Horsepower**

Hydraulic horsepower is the actual machine power available to do work through implements and work tools. It's much more than just the engine power under the hood - it's a core strength that differentiates Cat machines from other brands.

#### **Main Control Valve and Auxiliary Valves**

The 329E L uses a high-pressure system to tackle the toughest of work in short order. The machine features a highly efficient and simple back-to-back main control valve to improve fuel consumption and reliability. Also, shortened spool lengths and a built-in drift reduction valve have been added for greater controllability.

#### **Swing Priority Circuit**

The swing priority circuit on the 329E L uses an electric valve that's operated by the machine's Electronic Control Module (ECM). Compared to using a hydraulic valve, an electric valve allows for more finely tuned control, which is critical during material loading.

#### **Electric Boom Regeneration Valve**

This valve minimizes pump flow when the boom lowers, which helps improve fuel efficiency. It is optimized for any dial speed setting being used by the operator and results in less pressure loss for higher controllability, more productivity, and lower operating costs.



## Structures and Undercarriage Built to work in rugged environments

#### Frame

The upper frame (1) includes reinforced mountings to support the Roll-Over Protective Structure (ROPS) cab; the lower frame is reinforced to increase component durability.

#### Undercarriage

Fixed gauge standard and long undercarriage systems are available to support various work applications.

Heavy-duty track rollers, precision-forged carrier rollers (2), press-fit pin master joints, and enhanced track shoe bolts improve durability and reduce the risk of machine downtime and the need and cost to replace components.

A segmented three-piece guiding guard is now offered to help maintain track alignment and improve performance in multiple applications.

#### **Counterweights**

The counterweight (3) is a 5.8 mt unit, with a removal system featuring new integrated links which enable easy removal of the counterweight for maintenance or shipping.

## **Front Linkage** Made for high stress and long service life

## **Booms and Sticks**

The 329E L is offered with a range of booms and sticks (see list below). Each is built with internal baffle plates for added durability, and each undergoes ultrasound inspection to ensure weld quality and reliability.

Large box-section structures with thick, multi-plate fabrications, castings, and forgings are used in high-stress areas such as the boom nose, boom foot, boom cylinder, and stick foot to improve durability.

The boom nose pin retention method is a durable captured flag design. Boom durability is improved with a number of plate thickness changes. Also, the front linkage pins' inner bearing surfaces are welded, and a self-lubricated bearing is used to extend service intervals and increase uptime.

## **Selections**

There are two basic boom options: HD and ME. Sticks match the boom descriptions and applications below:

#### HD = Heavy Duty

This boom is designed to balance reach, digging force, and bucket capacity. It covers the vast majority of applications such as digging, loading, trenching, and working with hydraulic tools.

## **ME = Mass Excavation**

This boom is best used for quarry, high-volume loading, and other demanding applications. Mass fronts provide higher digging forces due to the geometry of the boom and stick relationship. Bucket linkage and cylinders are also built for greater durability.


# Work Tools Dig, hammer, rip, and cut with confidence



An extensive range of Cat Work Tools for the 329E L includes buckets, hydraulic hammers, multi-processors, scrap and demolition shears, grapples, and rippers. Each is designed to optimize machine versatility and performance.

# **Quick Couplers**

Quick couplers allow one person to change work tools in seconds for maximum performance and flexibility on a job site. One machine can move rapidly from task to task, and a fleet of similarly equipped machines can share a common work tool inventory.

# Cat Center-Lock™ Pin Grabber Coupler

Center-Lock is the pin grabber style coupler featuring a patented locking system. A highly visible lock clearly shows the operator when the coupler is engaged or disengaged from the bucket or work tool.

## Buckets

Cat buckets are designed as an integral part of the 329E L system and feature new geometry for better performance. The leading edge has been pushed forward, resulting in more efficient filling and better operator control for greatly improved productivity. Wear coverage in the corners and side cutter and sidebar protector coverage are improved. All benefits are captured in a new bucket line with a new bucket naming convention. Following are the types offered:

Caterpillar offers standard bucket categories for excavators. Each category is based on intended bucket durability when used in recommended application and material. Buckets are available as pin-on or can be used with a quick coupler.

# Two Durability Categories Suitable for Any Situation

Caterpillar offers two standard bucket categories for excavators. Each category is based on intended bucket durability when used in recommended applications and material. Each bucket durability type is available as pin-on or can be used with a Quick Coupler. Red areas on bucket images illustrate additional protection against wear as it increases across each category.

# Heavy Duty (HD)

The most popular bucket style, HD buckets are a good starting point when digging conditions are not well known like a wide range of impact and abrasion conditions that include mixed dirt, clay, and rock.

# Severe Duty (SD)

SD buckets are for higher abrasion conditions such as well shot granite and caliche.

# **Special Buckets**

Special buckets are available for the 329E L on request.

# **Comprehensive Product Support**

All Cat Work Tools are backed up by a world-wide network of well-stocked parts depots and highly experienced service and support personnel.







# **Integrated Technologies**

Solutions that make work easier and more efficient

# Cat® Grade Control Depth and Slope

This optional system combines traditional machine control and guidance with standard machine components at the factory. With factory-installed and calibrated components, the system is ready to go to work the moment it leaves the factory. The system utilizes internal front linkage sensors – well protected from the harsh working environment – to give operators real-time bucket tip position information through the cab monitor (1), which minimizes the need and cost for traditional grade checking and improves job site safety. It also helps the operator complete jobs in fewer cycles, which means less fuel use. Cat dealers can upgrade the system to full three-dimensional control by adding proven Cat AccuGrade<sup>™</sup> positioning technologies, including GPS and Universal Total Station (UTS).

## Cat Product Link™

This deeply integrated machine monitoring system (2 and 3) is designed to help customers improve their overall fleet management effectiveness. Events and diagnostic codes as well as hours, fuel consumption, idle time, machine location, and other detailed information are transmitted to a secure web based application called VisionLink<sup>TM</sup>, which uses powerful tools to communicate to users and dealers.





# **Serviceability** Fast, easy and safe access built in

# **Service Doors**

Wide service doors (1) and a one-piece hood design (2) provide easy access to the engine and cooling compartments. Both doors and hood feature enhanced hardware and a new screen design to help minimize debris entry.

# Compartments

The radiator, pump, and air cleaner (3) compartments provide easy access to major components. The fresh air filter (4) is located on the side of the cab to make it easy to reach and replace as needed.

# **Other Services**

The water separator with water level sensor has a primary fuel filter element located in the pump compartment near ground level; the electric priming pump is mounted on the primary filter base and is easy to service compared to traditional hand-priming pumps.

The fuel tank features a remote drain cock located in the pump compartment to make it easy to remove water and sediment during maintenance.

The engine oil check gauge and oil filter are situated in front of the engine compartment for easy access, and a uniquely designed drain cock helps prevent spills.

QuickEvac<sup>™</sup> system makes changing engine and hydraulic oil easy to complete in minutes rather than hours.



# **Safety** Features to help protect people







# **ROPS** Cab

The ROPS-certified cab (1) allows a Falling Object Guard Structure (FOGS) to be bolted directly to it.

# **Sound Proofing**

Improved sealing and roof lining lower noise levels inside the cab significantly during machine operation.

# Anti-Skid Plates

The surface of the upper structure and the top of the storage box area are covered with anti-skid plates to help prevent service personnel and operators from slipping during maintenance.

# Steps, Hand and Guard Rails

Steps on the track frame and storage box (2) along with extended hand and guard rails (3) to the upper deck enable operators to securely work on the machine.

## **Time Delay Cab and Boom Lights**

After the engine start key has been turned to the "OFF" position, lights will be illuminated to enhance visibility. The time delay can vary from 0 to 90 seconds, which can be set through the monitor.

# High Intensity Discharge (HID) Lights

Cab lights can be upgraded to HID for greater visibility.

## **Visibility – Windows**

Two windshield options are available: The 70/30 split configuration features an upper window equipped with handles on the top and both sides so the operator can slide it to store in the ceiling. The lower window is removable and can be stored on the left wall of the cab shell. A one-piece fixed front windshield provides operators an unobstructed forward view.

The large skylight provides great overhead visibility, excellent natural lighting, and good ventilation. The skylight can be opened completely to become an emergency exit.

## Monitor Warning System

The monitor is equipped with a buzzer that can warn operators of critical events like "Engine Oil Pressure Decrease," "Coolant Temperature High," or "Hydraulic Oil Temperature High" so they can take any necessary action.

#### **Rearview Camera**

The standard rearview camera is housed in the counterweight (4). The image projects through the cab monitor to give the operator a clear view of what is behind the machine.



# **Complete Customer Care**

Service you can count on

# **Product Support**

Cat dealers utilize a worldwide parts network to maximize your machines' uptime. Plus they can help you save money with Cat remanufactured components.

# **Machine Selection**

What are the job requirements and machine attachments? What production is needed? Your Cat dealer can provide recommendations to help you make the right machine choices.

## Purchase

Consider financing options and day-to-day operating costs. Look at dealer services that can be included in the machine's cost to yield lower owning and operating costs over time.

## **Customer Support Agreements**

Cat dealers offer a variety of customer support agreements and work with you to develop a plan to meet your specific needs. These plans can cover the entire machine, including attachments, to help protect your investment.

# **Operation**

Improving operating techniques can boost your profits. Your Cat dealer has videos, literature, and other ideas to help you increase productivity. Caterpillar also offers simulators and certified operator training to help maximize the return on your investment.

# Replacement

Repair, rebuild, or replace? Your Cat dealer can help you evaluate the cost involved so you can make the best choice for your business.



# **Sustainability** Generations ahead in every way

- The C7.1 ACERT engine, along with the Cat Clean Emission Module (CEM), meets EU Stage IIIB emissions regulations.
- The 329E L performs the same amount of work while burning 3% less fuel than the previous D Series model, which means more efficiency, less resources consumed, and fewer CO<sub>2</sub> emissions.
- The 329E L has the flexibility of running on either ultra-low-sulfur diesel (ULSD) fuel with 15 ppm of sulfur or less or biodiesel (B20) fuel blended with ULSD.
- A ground-level overfill indicator rises when the tank is full to help the operator avoid spilling.
- QuickEvac ensures fast, easy, and secure changing of engine and hydraulic oil.
- The 329E L is built to be rebuilt with major structures and components capable of being remanufactured to reduce waste and replacement costs.
- An eco-friendly engine oil filter eliminates the need for painted metal cans and aluminum top plates. The cartridge-style spin-on housing enables the internal filter to be separated and replaced; the used internal element can be incinerated to help reduce waste.
- The 329E L is an efficient, productive machine that's designed to conserve our natural resources for generations ahead.

## Engine

Engine Model	Cat <sup>®</sup> C7.1
	ACERT
Net Flywheel Power	161 kW
Net Flywheel Power	219 hp
(metric)	
Net Flywheel Power	216 hp
(imperial)	
Net Power – ISO 14396	179 kW
Net Power – ISO 14396	243 hp
(metric)	
Net Power – ISO 14396	240 hp
(imperial)	
Bore	105 mm
Stroke	135 mm
Displacement	7.01 L

## Weights

Minimum Weight*	28 717 kg
Maximum Weight**	30 959 kg

- \*Long Undercarriage, 6.15 m reach boom, R2.6CB2 stick, 5.8 mt counterweight, 1.33 m<sup>3</sup> bucket, 600 mm TG shoes.
- \*\*Long Undercarriage, 5.55 m mass boom, R2.5DB stick, 5.8 mt counterweight, 1.87 m<sup>3</sup> bucket, 800 mm TG shoes.

Hydraulic System	
Main System – Maximum Flow (Total)	494 L/min
Swing System – Maximum Flow	247 L/min
Maximum Pressure – Equipment Heavy Lift	38 000 kPa
Maximum Pressure – Equipment Normal	35 000 kPa
Maximum Pressure – Travel	35 000 kPa
Maximum Pressure – Swing	27 503 kPa
Pilot System – Maximum Flow	23.1 L/min
Pilot System – Maximum Pressure	3920 kPa
Boom Cylinder – Bore	140 mm
Boom Cylinder – Stroke	1407 mm
Stick Cylinder – Bore	150 mm
Stick Cylinder – Stroke	1646 mm
DB Bucket Cylinder – Bore	135 mm
DB Bucket Cylinder – Stroke	1156 mm
TB Bucket Cylinder – Bore	150 mm
TB Bucket Cylinder – Stroke	1151 mm

#### **Drive**

Maximum Travel Speed	5.1 km/h
Maximum Drawbar Pull	247 kN

## Swing Mechanism

Swing Speed	9.8 rpm
Swing Torque	82.2 kN·m

# **Service Refill Capacities**

Fuel Tank Capacity	520 L
Cooling System	44 L
Engine Oil (with filter)	22.5 L
Swing Drive (each)	10 L
Final Drive (each)	6 L
Hydraulic System (including tank)	310 L
Hydraulic Tank	155 L

# Track

Number of Shoes (each s	side)
Long Undercarriage	50
Long Narrow	50
Undercarriage	
Number of Track Rollers	s (each side)
Long Undercarriage	9
Long Narrow	9
Undercarriage	
Number of Carrier Rolle	ers (each side)
Long Undercarriage	2
Long Narrow	2
Undercarriage	

# **Sound Performance**

# ISO 6396 Operator Noise (Closed) 72 dB(A) Operator Noise (Open) 77 dB(A) ISO 6395 Spectator Noise 105 dB(A)

 Operator Sound – The operator sound level is measured according to the procedures specified in ANSI/SAE J1166 OCT98, meets OSHA ISO 6396, for cab offered by Caterpillar, when properly installed and maintained and tested with doors and windows closed.

- Exterior Sound The labeled spectator sound power level is measured according to the test procedures and conditions specified in 2000/14/EC.
- Hearing protection may be needed when operating with an open operator station and cab (when not properly maintained for doors/windows open) for extended periods or in a noisy environment.

## **Standards**

Brakes	ISO 10265 2008
Cab/FOGS	ISO 10262 1998
Cab/ROPS	ISO 12117-2:2008

# **329E L Hydraulic Excavator Specifications**

# Dimensions

All dimensions are approximate.



	HD Read 6.15 m	Mass Boom 5.55 m (18'3'')	
Stick	R3.2CB2 (10'6")	R2.65CB2 (8'8")	M2.5DB (8'2")
	mm	mm	mm
1 Shipping Height*	3372	3450	3520
Shipping Height with Guard Rail (without fronts)	3328	3328	3328
Shipping Height with Top Guard (without fronts)	3240	3240	3240
2 Shipping Length	10 386	10 400	9830
3 Tail Swing Radius	3044	3044	3044
4 Length to Center of Rollers			
Long Undercarriage	3994	3994	3994
5 Track Length			
Long Undercarriage	4855	4855	4855
<b>6</b> Ground Clearance			
Long Undercarriage	490	490	490
7 Track Gauge			
Long Undercarriage	2590	2590	2590
8 Transport Width			
Long Undercarriage – 600 mm (24") Shoes	3190	3190	3190
Long Undercarriage – 700 mm (28") Shoes	3290	3290	3290
Long Undercarriage – 800 mm (32") Shoes	3390	3390	3390
9 Cab Height	3044	3044	3044
Cab Height with Top Guard	3240	3240	3240
<b>10</b> Counterweight Clearance**	1134	1134	1134

\*Including shoe lug height.

\*\*Without shoe lug height.

# **Working Ranges**

All dimensions are approximate.



	HD Reach Booms 6.15 m (20'2")		Mass Boom 5.55 m (18'3")	
Stick	R3.2CB2 (10'6")	R3.2CB2 (10'6") R2.65CB2 (8'8")		
	mm	mm	mm	
1 Maximum Digging Depth	7250	6700	6100	
2 Maximum Reach at Ground Level	10 680	10 200	9430	
3 Maximum Cutting Height	10 010	9900	9130	
4 Maximum Loading Height	6950	6800	6000	
5 Minimum Loading Height	2290	2840	2470	
6 Maximum Depth Cut for 2440 mm Level Bottom	7090	6520	5910	
7 Maximum Vertical Wall Digging Depth	5980	5680	4250	

# **329E L Hydraulic Excavator Specifications**

# **Operating Weight and Ground Pressure**

	800 mm (32") Triple Grouser Shoes		700 mm (28") Triple Grouser Shoes		600 mm (24") Triple Grouser Shoes	
	kg	kPa	kg	kPa	kg	kPa
Long Undercarriage						
HD Reach Boom – 6.15 m (20'2")						
R3.2CB2 (10'6") HD	29 827	45.8	29 207	51.2	28 867	59.1
R2.65CB2 (8'8") HD	29 677	45.5	29 057	51.0	28 717	58.8
Mass Boom – 5.55 m (18'3")						
M2.5DB (8'2")	30 117	46.2	29 497	51.7	29 157	59.7

# **Major Component Weights**

	kg
Base Machine (with boom cylinder, without counterweight, front linkage and track)	
Long Undercarriage	15 500
Counterweight	
5.8 mt	5810
Boom (includes lines, pins and stick cylinder)	
HD Reach Boom – 6.15 m (20'2")	1950
Mass Boom – 5.55 m (18'3")	2020
Stick (includes lines, pins and bucket cylinder)	
R3.2CB2 (10'6") HD	980
R2.65CB2 (8'8") HD	830
M2.5DB (8'2")	1020
Track Shoe (Long/per two tracks)	
600 mm (24") Triple Grouser	3580
700 mm (28") Triple Grouser Heavy Duty	4280
800 mm (32") Triple Grouser	4540
Buckets	
CB1 1200HD – 1.33 m <sup>3</sup>	1047
CB1 1350HD – 1.54 m <sup>3</sup>	1096
$DB 1500GD - 1.87 m^3$	1227
A 1145DC – 0.6 m <sup>3</sup>	288.9

All weights are rounded up to nearest 10 kg except for buckets. Kg was rounded up separately so some of the kg do not match.

Base machine includes 75 kg operator weight, 90% fuel weight, and undercarriage with center guard.

700 mm triple grouser heavy duty track shoe is not used in the calculation for operating weight and ground pressure.

# **329E L Hydraulic Excavator Specifications**

# **Bucket and Stick Forces**

	HD Read 6.15 m	Mass Boom 5.55 m (18'3") DB-Family Bucket		
	CB-Fami			
Stick	R3.2CB2 (10'6")	R2.65CB2 (8'8")	M2.5DB (8'2")	
	kN	kN	kN	
Heavy Duty				
Bucket Digging Force (ISO)	179	179	210	
Stick Digging Force (ISO)	126	145	152	
Severe Duty				
Bucket Digging Force (ISO)	179	179	_	
Stick Digging Force (ISO)	126	145	_	

# **Tip Radius**

		CB-Family Bucket	
Heavy Duty	1650 mm	1798 mm	1779 mm
Severe Duty	1650 mm	-	-

#### **Reach Boom Lift Capacities – Counterweight: 5.8 mt**



# Reach Boom Lift Capacities – Counterweight: 5.8 mt



\*Indicates that the load is limited by hydraulic lifting capacity rather than tipping load. The above loads are in compliance with hydraulic excavator lift capacity standard ISO 10567:2007. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. Weight of all lifting accessories must be deducted from the above lifting capacities. Lifting capacities are based on the machine standing on a firm, uniform supporting surface. The use of a work tool attachment point to handle/lift objects, could affect the machine lift performance.

Lift capacity stays with ±5% for all available track shoes.

Always refer to the appropriate Operation and Maintenance Manual for specific product information.

# **329E L Hydraulic Excavator Specifications**

# **Reach Boom Lift Capacities – Counterweight: 5.8 mt**



# **Reach Boom Lift Capacities – Counterweight: 5.8 mt**



\*Indicates that the load is limited by hydraulic lifting capacity rather than tipping load. The above loads are in compliance with hydraulic excavator lift capacity standard ISO 10567:2007. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. Weight of all lifting accessories must be deducted from the above lifting capacities. Lifting capacities are based on the machine standing on a firm, uniform supporting surface. The use of a work tool attachment point to handle/lift objects, could affect the machine lift performance.

Lift capacity stays with ±5% for all available track shoes.

Always refer to the appropriate Operation and Maintenance Manual for specific product information.



# Mass Boom Lift Capacities - Counterweight: 5.8 mt



\*Indicates that the load is limited by hydraulic lifting capacity rather than tipping load. The above loads are in compliance with hydraulic excavator lift capacity standard ISO 10567:2007. They do not exceed 87% of hydraulic lifting capacity or 75% of tipping load. Weight of all lifting accessories must be deducted from the above lifting capacities. Lifting capacities are based on the machine standing on a firm, uniform supporting surface. The use of a work tool attachment point to handle/lift objects, could affect the machine lift performance.

Lift capacity stays with ±5% for all available track shoes.

Always refer to the appropriate Operation and Maintenance Manual for specific product information.

# **329E L Hydraulic Excavator Specifications**

# Work Tool Offering Guide\*

Boom Type	HD Read	ch Booms	Mass Boom
Stick Size	R3.2 (10'6")	R2.65 (8'8")	M2.5 (8'2")
Hydraulic Hammer	H120E s H130E s H140D s	H120E s H130E s H140D s	H120E s H130E s H140D s
Multi-Processor	MP20	MP20	MP20 MP30**
Crusher	P325	P325	P325 P335
Pulverizer	P225	P225	P225 P235
Demolition and Sorting Grapple	G320B G325B	G320B G325B	G325B
Mobile Scrap and Demolition Shear	S320B S325B** S340B***	S320B S325B S340B***	\$320B \$325B \$340B***
Compactor (Vibratory Plate)	CVP110	CVP110	CVP110
Contractors' Grapple	G120B-G130B	G120B-G130B	G120B-G130B
Trash Grapple			
Thumbs			
Rakes	These work tools are available for the 329E.		the 329E.
Center-Lock Pin Grabber Coupler	Consult	Consult your Cat dealer for proper match.	

Dedicated Quick Coupler

\*Matches are dependent on excavator configurations. Consult your Cat dealer for proper work tool match.

\*\*Pin-on only.

\*\*\*Boom Mount.

# **Bucket Specifications and Compatibility**

		Width	Capacity	Weight	Fill	HD Read	ch Boom	Mass Boom
	Linkage	mm	m <sup>3</sup>	kg	%	R2.65 (8'8")	R3.2 (10'6")	M2.5 (8'2")
With Center Lock Coupler								
General Duty (GD)	СВ	600	0.52	659	100%		•	
	СВ	750	0.71	726	100%			
	СВ	1050	1.12	834	100%			
	СВ	1200	1.33	1004	100%			
	СВ	1350	1.54	1068	100%		۲	
	СВ	1500	1.76	1098	100%	۲	θ	
Heavy Duty (HD)	СВ	600	0.52	808	100%			
	СВ	750	0.71	947	100%		•	
	СВ	900	0.91	1040	100%		•	
	СВ	1050	1.12	1134	100%			
	СВ	1200	1.33	1206	100%		۲	
	СВ	1350	1.54	1305	100%	۲	θ	
	СВ	1500	1.76	1406	100%	θ	0	
	СВ	1650	1.97	1477	100%	θ	0	
	DB	1500	1.88	1624	100%			۲
		Maximum load	with coupler (pa	yload + bucket)	kg	4295	3835	4992

The above loads are in compliance with hydraulic excavator standard EN474, they do not exceed 87% of hydraulic lifting capacity or 75% of tipping capacity with front linkage fully extended at ground line with bucket curled.

Capacity based on ISO 7451.

Bucket weight with Cat® General Duty tips.

Caterpillar recommends using appropriate work tools to maximize the value customers receive from our products. Use of work tools, including buckets, which are outside of Caterpillar's recommendations or specifications for weight, dimensions, flows, pressures, etc. may result in less-than-optimal performance, including but not limited to reductions in production, stability, reliability, and component durability. Improper use of a work tool resulting in sweeping, prying, twisting and/or catching of heavy loads will reduce the life of the boom and stick.

#### **Maximum Material Density:**

	2100 kg/m <sup>3</sup>
۲	1800 kg/m³
θ	1500 kg/m <sup>3</sup>
0	1200 kg/m <sup>3</sup>

Standard equipment may vary. Consult your Cat dealer for details.

#### ENGINE

C7.1 diesel engine Biodiesel capable U.S. Environmental Protection Agency (EPA) Tier 4 Interim emission standards. European Union Stage IIIB emission standards, and Japan MLIT Step 4 emission standards 2300 m altitude capability Electric priming pump Automatic engine speed control Standard, economy and high power modes Two-speed travel Side-by-side cooling system Radial seal air filter Air pre-filter Primary filter with water separator and water separator indicator switch Fuel differential indicator switch in fuel line 1×4 micron main filters 1×10 micron primary fuel line filter QuickEvac drains, engine and hydraulic oil

#### HYDRAULIC SYSTEM

Regeneration circuit for boom and stick Reverse swing dampening valve Automatic swing parking brake High-performance hydraulic return filter Capability of installing HP stackable valve and medium and QC valve Capability of installing additional auxiliary pump and circuit Boom lowering control device Stick lowering check valve

## Capability of installing Cat Bio hydraulic oil

#### CAB

Pressurized operator station with positive filtration Mirror package Sliding upper door window (left-hand cab door) Glass-breaking safety hammer Coat hook Beverage holder Literature holder Two stereo speakers Storage shelf suitable for lunch or toolbox Color LCD display with warning, filter/fluid change, and working hour information Adjustable armrest Height adjustable joystick consoles Neutral lever (lock out) for all controls Travel control pedals with removable hand levers Capability of installing two additional pedals Two power outlets, 10 amp (total) Laminated glass front window and tempered other windows Sunscreen Radio with MP3 auxiliary audio port Openable roof hatch Seat, high-back air suspension with heater and cooling Travel alarm

#### UNDERCARRIAGE

Grease Lubricated Track GLT2, resin seal Towing eye on base frame

#### COUNTERWEIGHT

5.8 mt

#### **ELECTRICAL**

80 amp alternator Circuit breaker Capability to electrically connect a beacon

#### LIGHTS

Boom lights with time delay Cab lights with time delay Exterior lights integrated into storage box

#### SECURITY

Cat one key security system Door locks Cap locks on fuel and hydraulic tanks Lockable external tool/storage box Signaling/warning horn Secondary engine shutoff switch Openable skylight for emergency exit Rearview camera

#### TECHNOLOGY

Product Link

Optional equipment may vary. Consult your Cat dealer for details.

#### HYDRAULIC SYSTEM

Additional circuit Boom and stick lines High-pressure line Medium-pressure line Cat quick coupler line – high- and medium-pressure capable Quick coupler tool control system Tool 20, Electronic Control device, 1/2P, common circuit

#### CAB

Left pedal

#### UNDERCARRIAGE

600 mm (24") double grouser shoes 600 mm (24") triple grouser shoes 700 mm (28") triple grouser shoes 800 mm (32") triple grouser shoes Guard, full length Center track guiding guard Segmented (3 piece) track guiding guard

#### **FRONT LINKAGE**

Bucket linkage, CB2 family with lifting eye Bucket linkage, DB family with lifting eye Heavy-duty reach boom 6.15 m (20'2") R2.65CB2 (8'8") HD 2650 mm stick R3.2CB2 (10'6") HD 3200 mm stick Mass boom 5.55 m (18'3") M2.5DB (8'2") 2500 mm stick

#### LIGHTS

Halogen lights, cab mounted HID lights, cab mounted

#### SECURITY

Guard, vandalism FOGS, bolt-on Guard, cab front, mesh Cat MSS (anti-theft device)

#### TECHNOLOGY

Cat Grade Control Depth and Slope

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at **www.cat.com** 

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Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

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# APPENDIX E

MSDS for Diesel Fuel & Fertilizer



SAFETY DATA SHEET		
DIESEL FUEL		PETRO CANADA
000003000395		
Version 3.1	Revision Date 2017/04/20	Print Date 2017/04/20
SECTION 1. IDENTIFICATION		
Product name :	DIESEL FUEL	
Synonyms :	Seasonal Diesel, #1 Diesel, #2 Heating D50, Arctic Diesel, Farm Diesel, Marine Diesel, LSD, Ultra Low Sulphur Diesel, I Naval Distillate, Dyed Diesel, Marked Di sel, Furnace special, Biodiesel blend, B Cloud (LC), Marine Gas Oil, Marine Gas	Oil, #1 Heating Oil, Diesel, Low Sulphur ULSD, Mining Diesel, iesel, Coloured Die- 1, B2, B5, Diesel Low s Oil Dyed.
Product code :	102762, 102763, 102755, 102302, 1027 100677, 101802, 100107, 100668, 1006 100652, 100460, 100065, 101796, 1017 101794, 101791, 100768, 100643, 1006 101800, 101797, 101788, 101789, 1017 100733, 100640, 100997, 100995, 1007	744, 101801, 100678, 558, 100911, 100663, 793, 101795, 101792, 542, 100103, 101798, 787, 102531, 100734, 732, 100731, 100994
Manufacturer or supplier's details	Petro-Canada P.O. Box 2844, 150 - 6th Avenue South Calgary Alberta T2P 3E3 Canada	-West
Emergency telephone num- ber	Suncor Energy: +1 403-296-3000; Canutec Transportation: 1-888- 226-883 996-6666; Poison Control Centre: Consult local tele emergency number(s).	32 (toll-free) or 613- ephone directory for
Recommended use of the chem	ical and restrictions on use	
Recommended use :	Diesel fuels are distillate fuels suitable fuels medium speed internal combustion engi sion ignition type. Mining diesels, marine naval distillates may have a higher flash	or use in high and ines of the compres- e diesels, MDO and point requirement.
Prepared by :	Product Safety: +1 905-804-4752	

# **SECTION 2. HAZARDS IDENTIFICATION**

# **Emergency Overview**

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.

# **GHS Classification**

: Category 3

# **DIESEL FUEL**

# 000003000395



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Acute toxicity (Inhalation)	: Category 4	
Skin irritation	: Category 2	
Carcinogenicity	: Category 2	
Specific target organ toxicity - single exposure	: Category 3 (Central nervous syster	n)
Specific target organ toxicity - repeated exposure	: Category 2 (Liver, thymus, Bone)	
Aspiration hazard	: Category 1	
GHS label elements Hazard pictograms		>
Signal word	: Danger	
Hazard statements	<ul> <li>Flammable liquid and vapour. May be fatal if swallowed and enter Causes skin irritation. Harmful if inhaled. May cause drowsiness or dizziness Suspected of causing cancer. May cause damage to organs (Live prolonged or repeated exposure.</li> </ul>	rs airways. S. er, thymus, Bone) through
Precautionary statements	<ul> <li>Prevention:         <ul> <li>Obtain special instructions before u Do not handle until all safety precatunderstood.</li> <li>Keep away from heat, hot surfaces other ignition sources. No smoking.</li> <li>Keep container tightly closed.</li> <li>Ground and bond container and red Use explosion-proof electrical/ vent Use non-sparking tools.</li> <li>Take action to prevent static dischat Do not breathe dust/ fume/ gas/ mist Wash skin thoroughly after handling.</li> <li>Use only outdoors or in a well-ventit Wear protective gloves/ protective of protection.</li> </ul> </li> <li>Response:         <ul> <li>IF SWALLOWED: Immediately call</li> <li>IF ON SKIN (or hair): Take off imm clothing. Rinse skin with water.</li> <li>IF INHALED: Remove person to free for breathing. Call a POISON CENT</li> </ul> </li> </ul>	Ise. Jutions have been read and , sparks, open flames and ceiving equipment. ilating/ lighting/ equipment. arges. st/ vapours/ spray. g. ilated area. clothing/ eye protection/ face a POISON CENTER/doctor. ediately all contaminated esh air and keep comfortable TER/doctor if you feel unwell. ical advice/ attention.

# DIESEL FUEL

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	Do NOT induce vomiting. If skin irritation occurs: Get medical Take off contaminated clothing and In case of fire: Use dry sand, dry che foam to extinguish. <b>Storage:</b> Store in a well-ventilated place. Kee Store in a well-ventilated place. Kee Store locked up. <b>Disposal:</b> Dispose of contents/ container to an plant.	advice/ attention. wash it before reuse. emical or alcohol-resistant p container tightly closed. p cool.
Potential Health Effects		
Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact Skin Absorption	
Target Organs	: Skin Eyes Respiratory Tract	
Inhalation	: May cause respiratory tract irritation Inhalation may cause central nervou Symptoms and signs include heada muscular weakness, drowsiness and consciousness.	ıs system effects. che, dizziness, fatigue, d in extreme cases, loss of
Skin	: Causes skin irritation.	
Eyes	: Causes eye irritation.	
Ingestion	<ul> <li>Ingestion may cause gastrointestina ing and diarrhoea.</li> <li>Aspiration hazard if swallowed - can damage.</li> </ul>	l irritation, nausea, vomit- enter lungs and cause
Aggravated Medical Condi- tion	: None known.	
<b>Other hazards</b> None known.		
IARC	No component of this product present a equal to 0.1% is identified as probable, human carcinogen by IARC.	at levels greater than or possible or confirmed
ACGIH	Confirmed animal carcinogen with unknown	nown relevance to hu-
	Fuel Oil No. 1	8008-20-6

# DIESEL FUEL

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# SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

## Hazardous components

Chemical name	CAS-No.	Concentration
fuels, diesel	68334-30-5	70 - 100 %
fuel oil no. 2	68476-30-2	
kerosine (petroleum)	8008-20-6	
kerosine (petroleum), hydrodesulfurized	64742-81-0	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 25 %
Soybean oil, Methyl ester	67784-80-9	0 - 5 %
Rape oil, Methyl ester	73891-99-3	
Fatty acids, tallow, Methyl esters	61788-61-2	

## **SECTION 4. FIRST AID MEASURES**

If inhaled	:	Move to fresh air. Artificial respiration and/or oxygen may be necessary. Seek medical advice.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	:	Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	:	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physi- cian or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	:	None known.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

# DIESEL FUEL

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## **SECTION 5. FIREFIGHTING MEASURES**

Suitable extinguishing media	:	Dry chemical Carbon dioxide (CO2) Water fog. Foam
Unsuitable extinguishing media	:	Do NOT use water jet.
Specific hazards during fire- fighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion prod- ucts	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), smoke and irritating vapours as products of incomplete combustion.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if nec- essary.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- tive equipment and emer- gency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

# SECTION 7. HANDLING AND STORAGE

Advice on sale handling	Smoking, eating and drinking should be prohibited in the ap- plication area. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid spark promoters. Ground/bond container and equip- ment. These alone may be insufficient to remove static elec- tricity. Avoid contact with skin, eyes and clothing. Do not ingest.
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# DIESEL FUEL

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	Keep away from heat and sources Keep container closed when not ir	s of ignition. n use.
Conditions for safe storage	<ul> <li>Store in original container. Containers which are opened muskept upright to prevent leakage. Keep in a dry, cool and well-ventil Keep in properly labelled containe To maintain product quality, do not light.</li> </ul>	at be carefully resealed and ated place. ers. of store in heat or direct sun-

# SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

# Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
kerosine (petroleum)	8008-20-6	TWA	200 mg/m3 (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
kerosine (petroleum), hy- drodesulfurized	64742-81-0	TWA	200 mg/m3 (As total hydro- carbon vapour)	ACGIH
		TWA	200 mg/m3 (As total hydro- carbon vapour)	ACGIH

**Engineering measures** : Use only in well-ventilated areas. Ensure that eyewash station and safety shower are proximal to the work-station location.

## Personal protective equipment

Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	:	organic vapour cartridge or canister may be permissible un- der certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circum- stances where air-purifying respirators may not provide ade- quate protection.

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Hand protection Material	:	neoprene, nitrile, polyvinyl alcohol (PV your PPE provider for breakthrough tin glove that is best for you based on you should be realized that eventually any their imperviousness, will get permeate Therefore, protective gloves should be wear and tear. At the first signs of hard should be changed.	A), Viton(R). Consult nes and the specific ir use patterns. It material regardless of ed by chemicals. regularly checked for dening and cracks, they
Remarks	:	Chemical-resistant, impervious gloves approved standard should be worn at a chemical products if a risk assessment essary.	complying with an all times when handling t indicates this is nec-
Eye protection	:	Wear face-shield and protective suit fo problems.	r abnormal processing
Skin and body protection	:	Choose body protection in relation to it tration and amount of dangerous subst	s type, to the concen- tances, and to the spe-
Protective measures	:	Wash contaminated clothing before re-	-use.
Hygiene measures	:	Remove and wash contaminated cloth ing the inside, before re-use. Wash face, hands and any exposed sk handling.	ing and gloves, includ- kin thoroughly after

# SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Bright oily liquid.
Colour	:	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	:	Mild petroleum oil like.
Odour Threshold	:	No data available
рН	:	No data available
Pour point	:	No data available
Boiling point/boiling range	:	150 - 371 °C (302 - 700 °F)
Flash point	:	> 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	:	225 °C (437 °F)
Evaporation rate	:	No data available
Flammability	:	Flammable in presence of open flames, sparks and heat. Va-

# DIESEL FUEL

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	pours are heavier than air an tance to sources of ignition a accumulate static charge and	nd may travel considerable dis- nd flash back. This product can d ignite.
Upper explosion limit	: 6 %(V)	
Lower explosion limit	: 0.7 %(V)	
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)	
Relative vapour density	: 4.5	
Relative density	: 0.8 - 0.88	
Solubility(ies)		
Water solubility	: insoluble	
Partition coefficient: n- octanol/water	: No data available	
Viscosity		
Viscosity, kinematic	: 1.3 - 4.1 cSt (40 °C / 104 °F)	
Explosive properties	: Do not pressurise, cut, weld, pose containers to heat or so may create fire or explosion I	braze, solder, drill, grind or ex- ources of ignition. Runoff to sewer hazard.

# SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reac- tions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Reactive with oxidising agents and acids.
Hazardous decomposition products	:	May release COx, NOx, SOx, H2S, smoke and irritating vapours when heated to decomposition.

## SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure Eye contact Ingestion Inhalation Skin contact Skin Absorption

## Acute toxicity

# **DIESEL FUEL**

## 000003000395



<b>Product:</b> Acute oral toxicity Acute inhalation toxicity	<ul><li>Remarks: No data available</li><li>Remarks: No data available</li></ul>	
Acute oral toxicity Acute inhalation toxicity	<ul><li>Remarks: No data available</li><li>Remarks: No data available</li></ul>	
Acute inhalation toxicity	: Remarks: No data available	
Acute dermal toxicity	: Assessment: The substance o toxicity Remarks: No data available	r mixture has no acute dermal
Components:		
fuels, diesel: Acute oral toxicity	: LD50 (Rat): 7,500 mg/kg,	
Acute dermal toxicity	: LD50 (Mouse): 24,500 mg/kg,	
<b>fuel oil no. 2:</b> Acute oral toxicity	: LD50 (Rat): 12,000 mg/kg,	
Acute inhalation toxicity	: LC50 (Rat): 4.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist	
<b>kerosine (petroleum):</b> Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg,	
Acute inhalation toxicity	: LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist	
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg,	,
<b>kerosine (petroleum), hydro</b> Acute oral toxicity	esulfurized: :LD50 (Rat): > 5.000 ma/ka.	
Acute inhalation toxicity	: LC50 (Rat): > 5.2 mg/l Exposure time: 4 hrs Test atmosphere: dust/mist	
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg,	,
Skin corrosion/irritation		
<b>Product:</b> Remarks: No data available		
Serious eve damage/eve irrit	tion	

Remarks: No data available

## Respiratory or skin sensitisation

# DIESEL FUEL

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No data available

Germ cell mutagenicity

No data available

# Carcinogenicity

No data available

## **Reproductive toxicity**

No data available

# **STOT - single exposure** No data available

STOT - repeated exposure

No data available

## **SECTION 12. ECOLOGICAL INFORMATION**

#### Ecotoxicity

# Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available
Toxicity to algae	:	Remarks: No data available
Toxicity to bacteria	:	Remarks: No data available
Persistence and degradabilit	у	
Product:		
Biodegradability	:	Remarks: No data available
Bioaccumulative potential No data available Mobility in soil		
No data available		
Other adverse effects No data available		

## SECTION 13. DISPOSAL CONSIDERATIONS

## **Disposal methods**

Waste from residues

: The product should not be allowed to enter drains, water

# DIESEL FUEL

## 000003000395



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	courses or the soil. Offer surplus and non-recyclable so posal company. Waste must be classified and label disposal. Send to a licensed waste managen Dispose of as hazardous waste in o national regulations. Dispose of product residue in account of the person responsible for waste	olutions to a licensed dis- led prior to recycling or nent company. compliance with local and rdance with the instructions e disposal.
Contaminated packaging	: Do not re-use empty containers.	

## **SECTION 14. TRANSPORT INFORMATION**

## **International Regulations**

IATA-DGR UN/ID No. Proper shipping name Class Packing group Labels	: UN 1202 : Diesel fuel : 3 : III : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft)	: 366
IMDG-Code UN number Proper shipping name	: UN 1202 : DIESEL FUEL
Class Packing group Labels EmS Code Marine pollutant	: 3 : III : 3 : F-E, S-E : no

# Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

## **National Regulations**

<b>TDG</b> UN number Proper shipping name	: UN 1202 : DIESEL FUEL
Class	: 3
Packing group	: 111
Labels	: 3
ERG Code	: 128
Marine pollutant	: no

# SECTION 15. REGULATORY INFORMATION

# DIESEL FUEL

### 000003000395



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This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:		
DSL	On the inventory, or in compliance with the inventory	
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.	
EINECS	On the inventory, or in compliance with the inventory	

# **SECTION 16. OTHER INFORMATION**

For Copy of SDS	:	Internet: www.petro-canada.ca/msds Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837- 1228 For Product Safety Information: 1 905-804-4752
Prepared by	:	Product Safety: +1 905-804-4752
Revision Date	:	2017/04/20

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



# SAFETY DATA SHEET 18-24-12 G 25%XCU Starter Fertilizer

	1. Product and Company Iden	tification	
Product Code: Product Name: Company Name:	902226 18-24-12 G 25%XCU Starter Fertilizer Turf Care Supply Corp. 50 Pearl Road Suite 200 Brunswick, OH 44212	<b>Phone Number:</b> 1 (330)558-0910	
Web site address: Email address: Emergency Contact: Information: Synonyms:	www.turfcaresupply.com regaffairs@tcscusa.com PERS Turf Care Supply Corp. Granular Fertilizer	1 (800)633-8253 1 (330)558-0910	
	2. Hazards Identification	on	
Acute Toxicity: Oral, Catego	ry 4		
GHS Signal Word:	Warning		
GHS Hazard Phrases:	Harmful if swallowed. Causes skin irritation. Causes serious eye i May cause damage to respiratory system ar exposure.	rritation. May cause repiratory irritation. Ind lungs through prolonged or repeated	
GHS Precaution Phrases:	Avoid breathing dust. Wear protective gloves, protective clothing, and eye protection. Call a POISON CENTER or doctor/physician if you feel unwell.		
GHS Response Phrases:	If eye irritation persists, get medical advice/a IF IN EYES: Rinse cautiously with water for present and easy to do so. Continue rinsing	attention. several minutes. Remove contact lenses, if	
GHS Storage and Disposal Phrases:	Store in a diked or contained area to preven Store in a closed container. If material cannot be completely used accord and contents according to section 13.	t uncontrolled release to the environment. ding to label directions, dispose of container	
Potential Health Effects (Acute and Chronic):	Chronic: Prolonged or repeated skin contact repeated exposure may cause permanent ey lung damage. Effects may be delayed.	may cause dermatitis. Prolonged or /e damage. Chronic exposure may cause	
Inhalation:	May be harmful if inhaled. Low hazard for no properties of this substance have not been fu effects. Material may be irritating to mucous	ormal industrial handling. The toxicological ully investigated. May cause systemic membranes and upper respiratory tract.	
Skin Contact:	May cause skin irritation. Dust causes mechaindustrial handling.	anical irritation. Low hazard for usual	
Eye Contact:	May cause eye irritation. Dust may cause me	echanical irritation.	
Ingestion:	May be harmful if swallowed. May cause gas and diarrhea. Low hazard for normal industri this substance have not been fully investigat	strointestinal irritation with nausea, vomiting al handling. The toxicological properties of ed. May cause systemic effects.	



# SAFETY DATA SHEET 18-24-12 G 25%XCU Starter Fertilizer

	3.	. Composition/Info	rmation on Ingredients		
CAS #	Hazardous Com	ponents (Chemical Name)	Concentration		
7783-28-0	Diammonium phosphate		52.2 %		
7447-40-7	Potassium chlorid	le	19.1 %		
57-13-6	Urea		18.7 %		
1317-65-3	Limestone		8.09 %		
14808-60-7	Quartz		0.270 %		
		4. First A	id Measures		
Emergency a Procedures:	and First Aid				
In Case of Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificia respiration. If breathing is difficult, give oxygen. Get medical aid.					
In Case of SI	<b>in Contact:</b> Get medical aid if irritation develops or persists. In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse. Wash off with soap and plenty of water.				
In Case of E	ye Contact:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Do NOT allow victim to rub eyes or keep eyes closed.			
In Case of In	gestion:	Get medical aid. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Call a poison control center. If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.			
Signs and Sy Exposure:	ymptoms Of	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.			
Note to Phys	sician:	Treat symptomatically and	supportively.		
		5. Fire Figh	ting Measures		
Flash Pt:		No data.			
Explosive Li	mits:	LEL: No data.	UEL: No data.		
Autoignition	Pt:	No data.			
Suitable Exti	inguishing Media	a:For small fires, use dry che chemical, carbon dioxide, a	emical, carbon dioxide, or water spray. For large fires, use dry alcohol-resistant foam, or water spray.		
Fire Fighting	Instructions:	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Substance is noncombustible. Decomposes at high temperatures, resulting in toxic and corrosive products. Runoff from fire control or dilution water may cause pollution.			
Flammable F Hazards:	Properties and	Most of the components of this product are non-combustible. However, a portion of them may support combustion at elevated temperatures.			
Hazardous C Products:	Combustion	Thermal decomposition ma chlorine, cyanic acid, and c potassium, sulfur, and chlo metals used as nutrients in zinc, and other toxic and in	ay result in the production of ammonia, formaldehyde, biuret, cyanide, and oxides of carbon, nitrogen, phosphorus, rine, and oxides of alkaline earth metals, and certain heavier fertilizer products, such as copper, iron, manganese, and ritating fumes and gases.		


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6. Accidental Release Measures					
Steps To Be Material Is R Spilled:	Taken In Case eleased Or	Use proper personal protective equipment as indicated in Section 8. Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation. Avoid runoff into storm sewers and ditches which lead to waterways. Do not let this product enter the environment except as directed on product label. Clean up spills immediately, observing precautions in the Protective Equipment section.			
		Personal pro Use persona adequate ve	ecautions. al protective equipment. Av entilation.	void dust formation. Avoic	breathing dust. Ensure
		Environmen Do not let pi	tal precautions. roduct enter drains.		
		Pick up and for disposal.	arrange disposal without o	reating dust. Keep in suit	table, closed containers
		PROCEDUF Exercise ap prevent inha	RES & PERSONAL PREC/ propriate precautions to mi alation of dust.	AUTIONS. inimize direct contact with	n skin or eyes and
		Methods for Sweep up, p and wash sp	cleaning up. blace in a bag and hold for bill site after material pickup	waste disposal. Avoid rai o is complete.	ising dust. Ventilate area
7. Handling and Storage					
Precautions Handling:	To Be Taken in	Use with ade contact with after handlin clothing befo	equate ventilation. Minimize eyes, skin, and clothing. A g. Use only in a well-ventila pre reuse.	e dust generation and acc void ingestion and inhala ated area. Keep containe	cumulation. Avoid tion. Wash thoroughly r tightly closed. Wash
Precautions Storing:	To Be Taken in	Provide appl Store in a co	ropriate exhaust ventilation ool, dry place. Keep contair	at places where dust is f her closed when not in us	formed. e.
	8	. Exposu	re Controls/Perso	nal Protection	
CAS #	Partial Chemical	Name	OSHA TWA	ACGIH TWA	Other Limits
7783-28-0	Diammonium pho	sphate	No data.	No data.	No data.
7447-40-7	Potassium chlorid	е	No data.	No data.	No data.
57-13-6	Urea		No data.	No data.	No data.

PEL: 15 (dust); 5 (resp.)

PEL: 8825 ppm/(%SiO2+5)

mg/m3

No data.

TLV: 0.05 mg/m3 (R)

14808-60-7 Quartz

Limestone

1317-65-3

GHS format

No data.

No data.



Respiratory Equipment	A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2		
(Specify Type):	requirements or European Standard EN 149 must be followed whenever workplace		
	conditions warrant respirator use. Where protection from nuisance levels of dusts are		
	desired, use type N95 (US) or type P1 (EN 143) dust masks. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges.		
Eye Protection:	Wear appropriate protective eyeglasses or chemical safety goggles as described by		
	OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard		
	EN166.		
Protective Gloves:	Wear appropriate protective gloves to prevent skin exposure. Wash and dry hands.		
Other Protective Clothing:	Wear appropriate protective clothing to prevent skin exposure. Choose body protection		
	according to the amount and concentration of the dangerous substance at the work		
	place.		
Engineering Controls	Facilities storing or utilizing this material should be equipped with an eyewash facility and		
(Ventilation etc.):	a safety shower. Use adequate ventilation to keep airborne concentrations low. Use		
	adequate general or local exhaust ventilation to keep airborne concentrations below the		
	permissible exposure limits.		
Work/Hygienic/Maintenance	Handle in accordance with good industrial hygiene and safety practice. Wash hands		
Practices:	before breaks and at the end of workday. Wash thoroughly after handling.		
	9. Physical and Chemical Properties		
Physical States:	[]Gas []Liquid [X]Solid		
Appearance and Odor:	Multi-colored, granular solid.		
	Slight ammonia-like odor.		
pH:	No data.		
Melting Point:	~ 133 C		
Boiling Point:	No data.		
Flash Pt:	No data.		
Evaporation Rate:	No data.		
Flammability (solid, gas):	No data available.		
Explosive Limits:	LEL: No data. UEL: No data.		
Vapor Pressure (vs. Air or	No data.		
mm Hg):			
Vapor Density (vs. Air = 1):	No data.		
Specific Gravity (water = 1):			
Buik density:			
Solubility in Water:	$\sim$ 1,079 G/L at 20.0 C		
Solubility Notes:	I he solubility cited is for the urea component of this product, if present. See section 3.		
Coefficient:	No data.		
Autoignition Pt	No data		
Decomposition Temperature	- 135 C		
Viscosity:	No data		



Additional Physical Information	The melting point and decomposition temperatures cited are for the urea component of this product, if present. See section 3. Urea decomposes before boiling. (UNEP Publication, OECD SIDS UREA, CAS No: 57-13-6)		
	10. Stability and Reactivity		
Stability:	Unstable [ ] Stable [ X ]		
Conditions To Avoid - Instability:	Incompatible materials, dust generation, heating to decomposition. High temperatures.		
Incompatibility - Materials To Avoid:	Strong oxidizing agents, bases, acids, aluminum.		
Hazardous Decomposition or Byproducts:	The decomposition of fertilizer products may result in the generation of some or all of the following: ammonia, formaldehyde, biuret, chlorine, cyanic acid, and cyanide, and oxides of carbon, nitrogen, phosphorus, potassium, sulfur, and chlorine, and oxides of alkaline earth metals, and certain heavier metals used as nutrients in fertilizer products, such as copper, iron, manganese, and zinc, and other irritating and toxic fumes and gases.		
Possibility of Hazardous Reactions:	Will occur [ ] Will not occur [ X ]		
Conditions To Avoid - Hazardous Reactions:	No data available.		
	11. Toxicological Information		
Toxicological Information:	Epidemiology: No information found. Teratogenicity: Teratogenic effects have occurred in experimental animals. Neurotoxic effects have occurred in experimental animals. Reproductive toxicity - no data available. Inhalation: May cause damage to organs through prolonged or repeated exposure.		
	CAS# 7447-40-7: Potassium chloride: Acute toxicity, LD50, Oral, Rat, 2600. MG/KG; "Sbornik Vysledku Toxixologickeho Vysetreni Latek A Pripravku,", Institut Pro Vychovu Vedoucicn P, Marhold, J.V., Institut Pro Vychovu Vedoucicn, Pracovniku Chemickeho, Prumyclu Praha Czechoslovakia, Vol/p/yr: -,8, 1972		
	Standard Draize Test, Eyes, Species: Rabbit, 500.0 MG, 24 H; "Sbornik Vysledku Toxixologickeho Vysetreni Latek A Pripravku," , Institut Pro Vychovu Vedoucicn P, Marhold, J.V., Institut Pro Vychovu Vedoucicn, Pracovniku Chemickeho, Prumyclu Praha Czechoslovakia, Vol/p/yr: -,8, 1972		
	CAS# 57-13-6: Urea: Other Studies:, TCLo, Inhalation, Rat, 288.0 MG/M3, 17 W; Gigiena Truda i Professional'nye Zabolevaniya.(Labor Hygiene and Occupational Disease), V/O Mezhdunarodnaya Kniga, Moscow 113095 Russia, Vol/p/yr: 30(3),43, 1986		
	Acute toxicity, LD50, Oral, Rat, 8471. MG/KG; Gigiena i Sanitariya, Mezhdunarodnaya Kniga, ul. B. Yakimanka, 39, 113095, Moscow 113095 Russia, Vol/p/yr: 51(6),8, 1986		
	Standard Draize Test, Skin, Human, 22.00 MG, 3 D; Cutaneous Toxicity, Proceedings of the 3rd Conference, 1976, D, V.A., and P. L, New York, Academic Press, Inc., London		



		United Kingdom, Vol/p/yr: -,127, 1	1977				
Carcinogenicity/Other Information:		This material may contain small amounts of respirable crystalline and amorphous silica. The International Agency for Cancer Research (IARC) has classified crystalline silica as a carcinogen to humans (Group 1), and amorphous silica as not classifiable as to its carcinogenicity to humans (Group 3). See "Silica, Some Silicates, Coal dust and para-Aramid Fibrils in IARC Monographs on the Evaluation of Carcinogenic Risks to Humans" (Vol. 68)					
CAS #	Hazardous C	omponents (Chemical Name)	NTP	IARC	ACGIH	OSHA	
7783-28-0	Diammonium	phosphate	n.a.	n.a.	n.a.	n.a.	
7447-40-7	Potassium chl	oride	n.a.	n.a.	n.a.	n.a.	
57-13-6	Urea		n.a.	n.a.	n.a.	n.a.	
1317-65-3	Limestone		n.a.	n.a.	n.a.	n.a.	
14808-60-7	Quartz		Known	1	A2	n.a.	
		12. Ecological In	formation				
		<ul> <li>hriper proceeds of reaction many procession many procession in procession in procession in procession in the orbit of the procession in the processing in the procession in the procession in the procesi</li></ul>					
		CAS# 7447-40-7: Potassium chlo LC50, Rainbow Trout (Oncorhynd temperature: 17.0 C C, pH: 7.70, Molluscicides to Zebra Mussels (I Organisms, Waller, D.L., J.J. Rac Dabrowska, 1993 CAS# 57-13-6: Urea: Lethal concentration to 0% of test 16000000. UG/L, 24 H, Mortality, Hardness: 98.00 MG/L; Appraisal Gillette L A, D L, Millor, and H F	t organisms., C Water tempera of a Chemical	610000. UG 00 MG/L; To: norpha) and L.L. Marking reek Chub (S ture: 15.0 C Waste Prob	/L, 48 H, Mor xicity of Canc Selected No , S.W. Fishe Semotilus atr - 21.0 C C, p lem by Fish T	tality, Water lidate ontarget r, and H. omaculatus), oH: 8.30, Foxicity Tests,	
Persistence and     No data available.       Degradability:							



Bioaccumula	tive Potential:	No data available.				
Mobility in Soil:     No data available.						
		13. Dis	posal Co	onsideratio	ns	
Waste Disposal Method:		If material cannot be completely used according to label directions, dispose of container and contents according to this section.				
		Contact a license	d profession	al waste disposa	I service to dispos	se of this material.
		Do not let produc	t enter drains	S.		
		Chemical waste g as a hazardous w in 40 CFR Parts 2 hazardous waste	generators m vaste. US EF 261. Addition regulations	nust determine w PA guidelines for nally, waste gene to ensure comple	hether a discarded the classification of rators must consu ete and accurate of	d chemical is classified determination are listed lt state and local classification.
		RCRA P-Series: I RCRA U-Series: I	None listed. None listed.			
		Observe all feder	al, state, and	d local environme	ental regulations.	
		14. Tı	ransport	Informatio	n	
LAND TRAN	SPORT (US DOT	-):				
DOT Proj DOT Haz	per Shipping Na ard Class:	me: Not Regulated	d.			
UN/NA N	umber:					
		15. Re	egulatory	/ Informatio	n	
EPA SARA (S	uperfund Amendn	nents and Reauthor	ization Act o	f 1986) Lists		
CAS # 7783-28-0	Hazardous Corr	ponents (Chemical	Name)	S. 302 (EHS)	<b>S. 304 RQ</b> No	<b>S. 313 (TRI)</b> No
7447-40-7	Potassium chlori	de		No	No	No
57-13-6	Urea				No	No
1317-65-3	Limestone	, stone			No	No
14808-60-7	Quartz			No	No	No
			A			
This material meets the EPA 'Hazard Categories' defined for SARA Title III Sections 311/312 as indicated:		[X] Yes [ ] No [X] Yes [ ] No [ ] Yes [X] No [ ] Yes [X] No [ ] Yes [X] No	<ul> <li>Acute (Immediate) Health Hazard</li> <li>Chronic (delayed) Health Hazard</li> <li>Fire Hazard</li> <li>Sudden Release of Pressure Hazard</li> <li>Reactive Hazard</li> </ul>			
CAS #	Hazardous Com	ponents (Chemical	Name)	Other US EPA or	State Lists	
7783-28-0	Diammonium phosphate			CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; MA Oil/HazMat: No; MI CMR, Part 5: No; NJ EHS: No: NY Part 597: No: PA HSL: No		
7447-40-7	40-7 Potassium chloride		CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; MA Oil/HazMat: No; MI CMR, Part 5: No; NJ EHS: No; NY Part 597: No; PA HSL: No			
57-13-6	Urea			CAA HAP,ODC: Inventory, 8A CA MI CMR, Part 5: No	No; CWA NPDES: IR; CA PROP.65: N No; NJ EHS: No; N	No; TSCA: Yes - Jo; MA Oil/HazMat: No; JY Part 597: No; PA HSL:
						GHS format



1317-65-3	Limestone	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; MA Oil/HazMat: No; MI CMR, Part 5: No; NJ EHS: Yes - 4001; NY Part 597: No; PA HSL: Yes - 1		
14808-60-7	Quartz	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; MA Oil/HazMat: No; MI CMR, Part 5: No; NJ EHS: Yes - 1660; NY Part 597: No; PA HSL: Yes - 1		
		16. Other Information		
Revision Date	):	04/28/2015		
Hazard Rating	g System:	Flammability Health NFPA: Special Hazard		
Additional Inf This Product:	ormation About	t No data available.		
Company Policy or Disclaimer:		Disclaimer and Limitation of Liability: This data sheet was developed from information on the constituent materials identified herein and does not relate to the use of such materials in combination with any other material or process. No warranty is expressed or implied with respect to the completeness or ongoing accuracy of the information contained in this data sheet, and Turf Care Supply Corp. disclaims all liability for reliance on such information. This data sheet is not a guarantee of safety. Users are responsible for ensuring that they have all current information necessary to safely use the product described by this data sheet for their specific purposes.		